

SYSTEM AND METHOD FOR INDEXING QUERIES, RULES AND SUBSCRIPTIONS

ABSTRACT

This invention introduces a new concept called virtual construct intervals (VCI), where each predicate interval is decomposed into one or more of these construct intervals. These VCIs strictly cover the predicate interval. Namely, every attribute value covered by the predicate interval is also covered by at least one of the decomposed VCIs, and vice versa. Each construct interval has a unique ID or interval coordinate and a set of endpoints. A construct interval is considered activated when a predicate interval using it in its decomposition is added to the system. The predicate ID is then inserted into the ID lists associated with the decomposed VCIs. To facilitate fast search, a bitmap vector is used to indicate the activation of VCIs that cover an event value. The challenge is to find an appropriate set of construct intervals to make predicate decomposition simple and, more importantly, to build efficient bitmap indexes. Because each construct interval covers only a small range of attribute values, the invention also uses bitmap clipping to cut unnecessary bitmap storage. To facilitate bitmap clipping, the invention introduces the covering segment concept. Bit positions outside a covering segment are pruned.